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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
DHINGRA, RAKESH KUMAR	

ART UNIT	PAPER NUMBER
1716	

NOTIFICATION DATE	DELIVERY MODE
05/11/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/589,272	ISHIBASHI ET AL.	
	Examiner	Art Unit	
	RAKESH DHINGRA	1716	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-16* is/are pending in the application.

4a) Of the above claim(s) *14 and 15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-13 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 02/28/2011 regarding rejection of claims 1, 8 (now included in amended claim 1) under 35 USC 103 (a) over Ishibashi in view of Hongoh have been fully considered but they are not persuasive as explained hereunder.

1) Regarding applicant's argument that Hongoh does not teach or suggest setting a predetermined distance D between an outer peripheral surface of the hanging portion and a side wall of the support part, examiner responds that Hongoh teaches a gap between the outer peripheral surface of the hanging portion (originating from the corner 80A) and a side wall of the support part formed by the curved portion with a radius P6 continuing with the tapered portion P7. Further, since Hongoh teaches that curved portions P3, P4, P5 (Fig. 2) and P6, P7 (Fig. 3) are shaped to avoid field concentration and prevent abnormal discharge from occurring (para. 0036, 0049), the gap between the outer peripheral surface of the hanging portion and a side wall of the support part would be a predetermined distance D, as recited in claim 1. Further, even though Hongoh does not explicitly teach the width of a gap D between an outer peripheral surface of the hanging portion and a side wall of the support part, it would be obvious to provide a gap between the transmission window 80 and the support part 122, and control/optimize the same to obtain the predictable result of preventing abnormal discharge, considering that Hongoh teaches that radii P6, P7 are shaped to avoid field concentration and prevent abnormal discharge from occurring between the transmission window 80 and the support part 122.

2) Further, regarding applicant's argument that in Mabuchi the depth HA1 is the depth of the inner recess, and not a depth of the hanging portion at a gap at the outer periphery of the transmission window, examiner responds that per Figure 11 of Mabuchi, depth HA1 appears to be the depth of the hanging portion 14b at the outer periphery of the transmission window 14 also. Even if considering that the depth of hanging portion at a gap outside of the hanging portion is different as argued by the applicant, the same as taught by Mabuchi is TW1-TW2 = 30-20 = 10 mm (Table 1). Mabuchi also teach that by controlling the shape of the recess (i.e. the vertical length L of the hanging portion as claimed in amended claim 1), uniformity of plasma processing can be enhanced (col. 6, lines 62-63).

3) Regarding applicant's contention that one of skill in the art would not combine Mabuchi with Hongoh and Ishibashi, since Mabuchi teaches away from having a gap between a hanging portion of the window and the support wall, examiner responds that Mabuchi was cited for height of the hanging portion (L) and not for the gap distance (D). Since the hanging portion in Mabuchi covers the side portion 21A of the counter electrode 21 against abnormal discharge, Mabuchi is not considered to teach away from the claimed invention, and it would be obvious to one of skill in the art to combine Mabuchi with Ishibashi and Hongoh. As already indicated above, Mabuchi et al teach the vertical length L of hanging portion (HA1 – Fig. 11) can be 10 mm (Fig. 11 and col. 4, lines 53-62 and Table 1). It would be obvious to optimize the ratio of L/D considering teachings by Hongoh and Mabuchi (as already explained above) to prevent abnormal discharge and obtain enhanced uniformity of plasma processing. Examiner notes that applicant's data of contamination (para 0047-0048 of applicant's specification) indicates

only a marginal benefit of having a hanging portion 21(viz. change from 16X 10.sup.10 to 7.5 X 10.sup. 10) in respect of contamination amount of aluminum, wherein the contamination amount is interpreted to be in units of moles or atoms. In the absence of any unexpected results, it would be obvious to optimize the distances L and D to obtain the predictable results of preventing abnormal discharge and obtain enhanced uniformity of plasma processing. Thus, Ishibashi in view of Hongoh and Mabuchi teach all limitations of claim 1 as explained below. Accordingly claims 1-7, 9, 16 have been rejected under 35 USC 103 (a) as explained below. Balance claim 10 has also been rejected under 35 USC 103 (a) as explained below.

4) With regard to applicant's argument about claim 11 that Hongoh does not teach or suggest an eave portion that is disposed apart from the contact point between the support part and the dielectric window examiner responds that Hongoh (Figure 2) still teach amended claim 11 limitation regarding eave portion since Hongoh teaches an eave portion (with an upper surface on which a sealing member 110 is supported) projecting into the process vessel is disposed apart (due to sealing gap) from a contact point (horizontal portion marked 108A) between the support part 106 and said transmissive window 80 by a predetermined distance (gap between the lower surface of the dielectric window 80 and the surface of the support part on which the sealing member 110 is supported) or more (e.g. Fig. 2 and para. 0025-0035). Thus Hongoh still teaches limitations of amended claim 11, as also detailed below under claim rejections (examiner notes that claim 11 does not recite that eave portion is separate from the support part). Thus, Hongoh teaches all limitations of claim 11 and accordingly claim 11 has been rejected under 35 USC 102 (b) as explained below. Dependent claims 12, 13

have also been rejected 35 USC 103 (a) as explained below. Additionally, amended claim 11 is also rejected under 35 USC 102 (b) over a new reference by Yamuchi et al (US 5,955,382) that teaches all limitations of claim 11, as explained below.

Further, in view of amendment to claim 1 the double patenting rejections have been withdrawn.

Specification

In view of amended abstract submitted by the applicant on 02/28/2011, the objection is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Hongoh et al (US 2002/0066536).

Regarding Claim 11: Hongoh et al teach a plasma processing apparatus comprising:

a process vessel 36 in which a substrate W is processed;

a gas introducing part 52 that introduces process gas into said process vessel;

a transmissive window 80 including a dielectric to air-tightly cover an upper opening of the process vessel;

an antenna member 86, located above the transmissive window, that introduces a microwave into the process vessel;

a support part 106 supporting a peripheral edge portion of said transmissive window 80; and an exhaust pipe 76 that exhausts an atmosphere in the process vessel via an exhaust device (not shown),

wherein under said support part, an eave portion (with an upper surface on which a sealing member 110 is supported) projecting into the process vessel is disposed apart (due to sealing gap) from a contact point (horizontal portion marked 108A) between the support part 106 and said transmissive window 80 by a predetermined distance (gap between the lower surface of the dielectric window 80 and the surface of the support part on which the sealing member 110 is supported) or more (e.g. Fig. 2 and para. 0025-0035).

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamauchi et al (US 5,955,382).

Regarding Claim 11: Yamuchi et al teach a plasma processing apparatus comprising:

a process vessel 21 in which a substrate 34is processed;

a gas introducing part 24 that introduces process gas into said process vessel;

a transmissive window 28 including a dielectric to air-tightly cover an upper opening of the process vessel;

an antenna member 31 located above the transmissive window, that introduces a microwave into the process vessel;

a support part supporting a peripheral edge portion of said transmissive window 28; and an exhaust pipe 27 that exhausts an atmosphere in the process vessel via an exhaust device (not shown),

wherein under said support part, an eave portion 32 projecting into the process vessel is disposed apart from a contact point between the support part and said transmissive window 28 by a predetermined distance or more (since Yamauchi et al teach predetermined distances A, B, C, D) {e.g. Fig. 13 and col. 12, lines 1-35}.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1- 7, 9, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (WO 03/105544 corresponding to US 7,469,654 which is referred to hereinafter) in view of Hongoh et al (US 2002/0066536) and Mabuchi et al (US 6,091,045).

Regarding Claim 1: Ishibashi et al teach a plasma processing apparatus comprising:

a process vessel 1 in which a substrate 11 is processed;

a gas introducing part (not shown) that introduces process gas into said process vessel;

a transmissive window 15 including a dielectric to air-tightly cover an upper opening of the process vessel;

an antenna member 3c, located above the transmissive window, that introduces a microwave into the process vessel;

a support part 10 supporting a peripheral edge portion of said transmissive window 15; and an exhaust pipe (not shown) that exhausts an atmosphere in the process vessel via an exhaust device 9,

wherein said transmissive window 15 has, in a center area thereof, a hanging portion (with side wall 31 shown in Figure 20) made of a same material as a material of said transmissive window, and a gap is formed between an outer peripheral surface 31 of the hanging portion and a sidewall of said support part 10 (e.g. Figs. 20, 21 and col. 11, lines-8-30).

Ishibashi et al do teach a gap between an outer peripheral surface of the hanging portion and a sidewall of said support part but do not explicitly teach gap is with a

predetermined distance or more, and wherein L/D is equal to 3 or more where L is a vertical length of the hanging portion and D is the predetermined distance.

However it is known in the art to provide a predetermined gap between adjoining parts in microwave plasma apparatus to avoid abnormal discharge due to localized microwave electric fields as per reference cited hereunder.

Hongoh et al teach a microwave plasma apparatus wherein a transmissive window 80 with an overhang portion is supported on a support 122 in a plasma chamber 36. Hongoh et al further teach a gap formed between the outer peripheral surface of the hanging portion (originating from the corner 80A) and a side wall of the support part formed by a curved portion with a radius P6 continuing with the tapered portion P7. Hongoh et al further teach curved portions P3, P4, P5 (Fig. 2) and P6, P7 (Fig. 3) that are shaped to avoid field concentration and prevent abnormal discharge from occurring (para. 0036, 0048-0052). Since Hongoh et al teach that the corner portions with radii P6, P7 are shaped with the consideration to avoid abnormal discharge, it would be obvious to provide a gap with a predetermined distance between the outer peripheral surface of the hanging portion of the transmissive window 80 and a side wall of the support part to avoid field concentration and prevent abnormal discharge from occurring between the transmissive window 80 and the support part 122.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a predetermined gap between an outer peripheral surface of the hanging portion and a sidewall of said support part as taught by Hongoh et al in the apparatus of Ishibashi et al to prevent occurrence of abnormal discharge.

Ishibashi et al in view of Hongoh et al do not teach L/D is equal to 3 or more where L is a vertical length of the hanging portion and D is the predetermined distance.

Mabuchi et al teach a plasma apparatus comprising a process chamber 11 and a transmissive plate 14 with a hanging portion and a recessed portion formed in a center side area of the hanging portion. Mabuchi further teach that the recessed portion can be suitably shaped including a tapered surface inclining toward a center side of the recessed portion to obtain enhanced plasma uniformity. Mabuchi et al also teach the vertical length L of hanging portion (HA1 – Fig. 11) can be 10 mm (Fig. 11 and col. 4, lines 53-62 and col. 6, lines 62-63 and Table 1). Further, as already explained above, since Hongoh teaches (Fig. 3) that gap (distance D) between the outer peripheral surface of the hanging portion and a sidewall surface of the support part, can be a predetermined distance, it would be obvious to optimize the same depending upon process limitations like material of the transmissive plate 80 and microwave power used etc. It would thus be obvious to optimize the ratio L/D in view of teachings of Mabuchi et al and Hongoh et al to prevent abnormal discharge and obtain enhanced uniformity of plasma processing [Examiner notes that applicant's data of contamination (para 0047-0048 of applicant's specification) indicates only a marginal benefit of having a hanging portion 21(viz. change from 16X 10.sup.10 to 7.5 X 10.sup. 10) in respect of contamination amount of aluminum, wherein the contamination amount is interpreted to be in units of moles or atoms. In the absence of disclosure of any unexpected results for keeping the claimed ratio of L/D to be 3 or more, it would be obvious to optimize the distances L and D to obtain the predictable results of preventing abnormal discharge and obtain enhanced uniformity of plasma processing].

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to optimize the ratio L/D as taught by Mabuchi et al in the apparatus of Ishibashi et al in view of Hongoh et al to prevent abnormal discharge and obtain enhanced plasma uniformity.

Regarding Claims 2, 3: Ishibashi et al in view of Hongoh et al teach a gap with predetermined distance is formed between an outer peripheral surface of the hanging portion and a sidewall of said support part (as explained above under claim 1).

Ishibashi et al in view of Hongoh et al do not explicitly teach that the predetermined distance is 0.5 to 10 mm/5 mm.

Hongoh et al teach a gap (Fig. 3) formed between the outer peripheral surface of the hanging portion (originating from the corner 80A) and a side wall of the support part formed by a curved portion with a radius P6 continuing with the tapered portion P7. Hongoh et al further teach curved portions P3, P4, P5 (Fig. 2) and P6, P7 (Fig. 3) that are shaped to avoid field concentration and prevent abnormal discharge from occurring (para. 0036, 0048-0052). Since Hongoh et al teach that the corner portions with radii P6, P7 are shaped with the consideration to avoid abnormal discharge, it would be obvious to optimize the gap (with a predetermined distance) between the outer peripheral surface of the hanging portion of the transmissive window 80 and a side wall of the support part to avoid field concentration and prevent abnormal discharge from occurring between the transmissive window 80 and the support part 122.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to optimize the predetermined gap between an outer peripheral

surface of the hanging portion and a sidewall of said support part as taught by Hongoh et al in the apparatus of Ishibashi et al to prevent occurrence of abnormal discharge.

Regarding Claim 4: Ishibashi et al in view of Hongoh et al teach that outer peripheral surface 31 (reflecting surface) of the hanging portion of the transmissive plate 15 (top plate) can be tapered surface (Ishibashi et al – col. 11, lines 24-43).

Ishibashi et al in view of Hongoh et al do not explicitly teach the taper is such that the gap gradually becomes larger towards a lower side.

Mabuchi et al teach a plasma apparatus comprising a process chamber 11 and a transmissive plate 14 with a hanging portion and a recessed portion formed in a center side area of the hanging portion. Mabuchi further teach that the recessed portion can be suitably shaped including a tapered surface inclining toward a center side of the recessed portion to obtain enhanced plasma uniformity (Fig. 11 and col. 4, lines 53-62 and col. 6, lines 62-63). It would be obvious to provide the hanging portion of the transmissive plate 15 as tapered that gradually becomes larger towards a lower side so as to prevent undesired propagation of high frequency waves inside the transmissive plate and density distribution of plasma can be made more uniform within the plasma chamber.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide the hanging portion of the transmissive plate 15 as tapered that gradually becomes larger towards a lower side as taught by Mabuchi et al in the apparatus of Ishibashi et al in view of Hongoh et al to obtain enhanced uniformity of plasma processing.

Regarding Claim 5: Ishibashi et al teach a recessed portion is formed in a center side area of the hanging portion (e.g. Figs. 18, 19).

Regarding Claim 6: Ishibashi et al in view of Hongoh et al teach all limitations of the claim including recessed portion formed in a center side area of the hanging portion, but do not explicitly teach a sidewall forming the recessed portion is a tapered surface inclining toward a center side of the recessed portion.

Mabuchi et al teach a plasma apparatus comprising a process chamber 11 and a transmissive plate 14 with a hanging portion and a recesses portion formed in a center side area of the hanging portion. Mabuchi further teach that the recessed portion can be suitably shaped including a tapered surface inclining toward a center side of the recessed portion to further improve plasma uniformity (e.g. Figs. 2, 7, 9-11 and col. 4, line 30 to col. 6, line 67).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide the recess with a tapered surface inclining towards a center side of the recessed portion as taught by Mabuchi et al in the apparatus of Ishibashi et al in view of Hongoh et al to obtain enhanced uniformity of plasma processing.

Regarding Claim 7: Ishibashi et al in view of Hongoh et al do not teach width of the hanging portion is λ/4 or less, where λ is wavelength of microwaves in the said tarnsmissive window.

Mabuchi et al teach a plasma apparatus with a transmissive window 14 with a hanging portion 14b (Fig. 11). Mabuchi et al further teach that width of the hanging portion is {(DA2-DA1)/2 = (258-190)/2 = 34 mm. Further, Hongoh et al teach (para.

0044) that for quartz dielectric window, λ/4 is 33.5/2 = 16.7 mm. Mabuchi et al also teach that diameter of recess is determined based upon process limitations like uniformity of processing, higher rate of processing etc, and thus it would be obvious to optimize the width of the hanging portion accordingly (Figs. 10, 11, Table 1 and col. 4, lines 30-62) {claim limitation "width of hanging portion" is interpreted to imply width of hanging portion when the window has a recessed portion in the center area}.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to optimize the width of the hanging portion as taught by Mabuchi et al in the apparatus of Ishibashi et al in view of Hongoh et al to obtain enhanced uniformity of plasma processing.

Regarding Claim 9: Ishibashi et al in view of Hongoh et al do not teach a vertical length of the hanging portion is 20 mm or more.

Mabuchi et al teach vertical length of hanging portion (HA1 – Fig. 11) can be 10 mm (Table 1). Mabuchi et al further teach that recess depth (vertical height of the hanging portion) is determined based upon process limitations like thickness of the transmissive window, plasma processing rate and uniformity (e.g. col. 4, lines 53-62). It would thus be obvious to optimize the vertical height of the hanging portion as per process limitations like thickness of the transmissive window, plasma processing rate and uniformity.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to optimize the length of the vertical portion as taught by Mabuchi et al in the apparatus of Ishibashi et al in view of Hongoh et al to obtain enhanced uniformity of plasma processing.

Regarding Claim 16: Ishibashi et al in view of Hongoh et al teach all limitations of the claim including that corner portions P3, P5 of the support part 106 are curved to avoid electric field concentration and prevent abnormal discharge (para. 0034-0036).

Ishibashi et al in view of Hongoh et al do not explicitly teach comer portions on a boundary between the outer peripheral surface of the hanging portion and a portion, in the transmissive window, supported by the support part, and comer portions on a boundary between the outer peripheral surface of the hanging portion and a lower surface of the hanging portion, have a curved surface shape.

Mabuchi et al teach a plasma apparatus comprising a process chamber 11 and a transmissive plate 14 with a hanging portion and a recessed portion formed in a center side area of the hanging portion. Mabuchi further teach that the recessed portion can be suitably shaped including a tapered surface inclining toward a center side of the recessed portion to obtain enhanced plasma uniformity. Mabuchi et al teach edge of recess 14a may be curved (e.g. Fig. 7 and col. 5, lines 10-15). It would be obvious to provide curves at corners of the transmissive plate, viz. comer portions on a boundary between the outer peripheral surface of the hanging portion and a portion, in the transmissive window, supported by the support part, and comer portions on a boundary between the outer peripheral surface of the hanging portion and a lower surface of the hanging portion, in view of teachings of Hongoh et al to prevent electric field concentrations for abnormal discharge and obtain improved uniformity of plasma processing.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide curves at corners of the transmissive plate, viz. comer

portions on a boundary between the outer peripheral surface of the hanging portion and a portion, in the transmissive window, supported by the support part, and comer portions on a boundary between the outer peripheral surface of the hanging portion and a lower surface of the hanging portion as taught by Mabuchi et al in the apparatus of Ishibashi et al in view of Hongoh et al to prevent electric field concentrations for abnormal discharge and obtain improved uniformity of plasma processing.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (WO 03/105544 corresponding to US 7,469,654 which is referred to hereinafter) in view of Hongoh et al (US 2002/0066536) and Mabuchi et al (US 6,091,045) as applied to claims 1 – 7, 9, 16 and further in view of O'Donnell et al (US 2004/0002221).

Regarding Claim10: Ishibashi et al in view of Hongoh et al and Mabuchi et al teach all limitations of the claim except the support part or the side wall facing the inside of the process vessel is coated with Y2O3.

O'Donnell et al teach a plasma apparatus wherein interior chamber walls, dielectric window etc are coated with Y2O3 to prevent their deterioration when exposed to plasma (para. 0050).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a coating of Y2O3 on the support part as taught by O'Donnell et al in the apparatus of Ishibashi et al in view of Hongoh et al and Mabuchi et al to prevent deterioration when exposed to plasma.

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongoh et al (US 2002/0066536).

Regarding Claims 12, 13: Hongoh et al teach all limitations of the claim except the predetermined distance is 0.5 to 5/10 mm.

Hongoh et al the predetermined distance (depth of sealing groove) 108 is 3-6 mm (which nearly matches the claimed range gap of 0.5 to 5 mm (para. 0035). It would be obvious to optimize the predetermined distance as per process limitations like microwave power used, material of transmissive plate etc.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to optimize the predetermined distance as taught by Hongoh et al as per process limitations like microwave power used, material of transmissive plate etc.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAKESH DHINGRA whose telephone number is (571)272-5959. The examiner can normally be reached on 8:30 - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. D./
Examiner, Art Unit 1716

/Karla Moore/
Primary Examiner, Art Unit 1716